

**ABSTRACT**

A double diffused MOS (DMOS) transistor structure is provided that uses a trench  
trough suitable for high-density integration with mixed signal analog and digital circuit  
applications. The DMOS device can be added to any advanced CMOS process using shallow  
5 trench isolation by adding additional process steps for trench trough formation, a trench  
implant and a P-body implant. The trench trough and trench implant provide a novel method  
of forming a drain extension for a high-voltage DMOS device.